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THE  
AMERICAN NATURALIST

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VOL. XXI.

OCTOBER, 1887.

No. 10.

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THE STUDY OF A SMALL AND ISOLATED COMMUNITY IN THE BAHAMA ISLANDS.

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SINCE the Bahama group of islands lies between  $21^{\circ}$  and  $27^{\circ}$  north latitude, it will appear that they are chiefly sub-tropical, but for the purposes of this paper they may be considered as practically tropical. The writer's experience was gathered from a residence on Green Turtle Key throughout the month of June, 1886, he having had the good fortune to make one of a party of biologists who sailed under the auspices of the Johns Hopkins University in May. It will be remembered that the Bahamas consist of several small islands without much vegetation, some thousands of rocks, and a few larger islands, the most important of which is Abaco. The majority of the keys, as the smaller islands are called, are uninhabited. Green Turtle Key, on which our party took up residence, is within about two miles of Abaco, which latter is known locally as "The Main." Green Turtle Key, about a mile in length by a quarter of a mile in greatest breadth, is the residence of some six hundred people, who are gathered together on the widest end of the island, and have formed a picturesque little village, with its streets on the solid white limestone, its alleys, its garden-plots, its shops, its school, and its churches.

The Bahamas as a whole have a common origin, as coral formations, and all the phases of the growth and changes of coral reefs and islands may be studied here. But this has

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already been done by others, and the writer purposes in this paper to attempt what he believes is a new task,—a description of the life of a small and almost wholly isolated community of Anglo-Saxons and Negroes in a tropical or sub-tropical region, from the point of view of biology, psychology, and physiology (or medicine); for it seems to him that the conditions are here furnished for the solution, in great part, of certain highly interesting problems. The briefest possible glance at the history of the Bahamas will make the general treatment of the subject clearer.

Columbus, who visited St. Salvador (either Cat or Watling Island), thus wrote to Ferdinand and Isabella of the natives:

“This country excels all others as far as the day surpasses the night in splendor; the natives love their neighbors as themselves; their conversation is the sweetest imaginable; their faces always smiling; and so gentle and affectionate are they, that I swear to your Highness there is no better people in the world.”

This simplicity made them a prey to the perfidious Spaniard; and forty thousand of them are said to have been transported in 1509 to the mines of Hispania.

The English visited the Bahamas in 1629, and soon took possession, on the plea of ridding them of the pirates with which they were infested. In 1718 the first crown governor was appointed; and soon after the pineapple was introduced into New Providence.

During the American war of independence many colonists took up residence in the Bahamas, bringing their slaves with them; and cotton was largely cultivated, till the entire crop was, in 1788, destroyed by the red bug. In 1834 slavery was abolished by purchase.

In 1865 blockade-running was common. Wrecking had been prevalent, but gradually declined, though it has left a decided impress on the present inhabitants.

How do the natives gain a subsistence, and what does that subsistence imply?

Abaco, though a large island, is sparsely inhabited, mostly by negroes, for “swamp fever” (malaria) in a severe form is common; Green Turtle Key is, however, free from any prevailing form of disease, as the island is, throughout, high enough to escape stagnant water. The population on this key consists of Whites, mostly of English descent, many of them retaining the characteristic accent of their forefathers, and of Blacks, the de-

scendants of the slaves of former times, in about equal proportions. The two races co-operate in perfect harmony for the general good; the Black accepting an inferior *status* in society without a murmur. The best part of the town and the more eligible dwellings are occupied by the Whites, it need hardly be said; but all mingle together in the school and the church. The principal sources of income are pineapple-culture and the sponge-fishery. The government introduced the pineapple and sold the land at a price so low that all could purchase "plantations;" so that most of the natives, whether black or white, either have, or had originally, plantations of larger or smaller size. I have been informed by a gentleman engaged in the fruit trade that about fifteen or twenty vessels are loaded, during the summer months, with the pineapple; the average value of a cargo being about two thousand five hundred dollars. This would make a total of, say, forty thousand dollars, to be distributed among six hundred people; which would give less than seventy dollars to each, even assuming that the whole was thus divided, which is not the case, since the shippers' profits are to be deducted; and the natives complain loudly of the low price given for the fruit. Reckoning that an equal amount is derived from "sponging," the total income would still be very small. It is to be remembered, too, that though bananas abound, and of cocoa-nuts there are enough, these are not exported. Of the large variety of fruit-trees growing wild, often entering into the formation of the thickets in which one now and then finds himself entangled as he roams about the key, none are cultivated, not even the orange or lemon. The palmetto, likewise introduced by the English government, now grows wild, and is used by the negroes and poorer whites for thatching their houses.

The only plant that is really cultivated, except the pineapple, is the sweet-potato and the allied yam; the potato is, in fact, the staple article of diet among the blacks and a large proportion of the whites. As the only food-animal kept on the island is the hog, of a very poor breed and in still poorer condition, fresh meat is practically unknown, while canned meat is too dear to obtain, except as a rare luxury. Fish may be caught in abundance in the open ocean a mile or two away; but this implies the possession of a boat—which all have not got—and the expenditure of a little energy, which requires more than an

ordinary stimulus, as one learns, in a tropical climate. Stoves are almost unknown; and it was with the greatest difficulty that we could secure one at an exorbitant figure. Cooking is performed in the most primitive fashion, mostly out of doors. But few fowls are kept, and fresh milk is, of course, unknown; so that milk, eggs, and meat must be practically excluded from the dietary. Nor is fruit partaken of so abundantly as might be supposed; it is reserved to sell to the sailors who visit the island during the summer months. The pilot who came aboard to take our vessel over the reef had with him an unsightly lump of what he called bread, which, however, consisted really of a heavy mass of crushed sweet-potatoes baked into a sort of cake. Indian meal seems to be largely used also, though corn is not grown.

As in other ill-fed communities, meals are very irregular. We learned on one occasion that our diver, who had been at work up till 11 A.M., had not yet partaken of any breakfast, such fasting being, he said, a frequent occurrence. On another occasion, when bringing up some corals for us, he seized the opportunity of placing half a dozen big molluscs (*Strombus gigas*) in the bow of the boat,—“for my breakfast to-morrow.” These were to be chopped up and stewed with onions, etc. By the side of many a house might be seen piles of the shells of these molluscs, left to be burned for lime, furnishing that of the very whitest and best, as might be expected. Enough will have been said to show that, from a physiological stand-point, this community is in a state of partial starvation.

Though it may surprise many to learn of it, a similar condition of things constantly exists, to my certain knowledge, at a fishing station on the coast of North Carolina; nor is it probably confined to that one locality. And the opportunity of comparing these two communities, similar in many respects, each being composed of Blacks and Whites, has been most instructive, and affords a firmer basis for the conclusions to be drawn in this paper.

When one examines the housing and general hygienic condition of the people, especially of the Blacks, a state not much more satisfactory is found. The Negro families are large; the rooms in the houses few and small; bedding insufficient; and huddling the consequence. Moreover, the natives, both white and black, have a peculiar custom of closing up the doors and windows, owing, I fancy, to dread of the violent storms, which

often come up suddenly in the night, and may, in fact, work havoc in an ill-built hut before the openings can be closed. Nevertheless, it follows that the inmates must be breathing a most impure air. One might expect that, with such an equable temperature and generally favorable climate, consumption would be unknown; but I found this was by no means the case, though it is much more common among the Blacks. This is to be explained by the racial tendency of Negroes towards phthisis; and by the fact that their condition of partial starvation is exaggerated by the unhygienic surroundings of their lives, particularly the impure air they breathe for half the time.

These facts are especially instructive, and strongly impress a medical observer. The natives themselves trace consumption to "licks," meaning blows and general ill usage. Such must not be left out of the reckoning; but in this case it cannot be set down to the excessive use of alcohol, for this is, fortunately, a very rare thing in this community. This brutality among a proportion of the Negroes is really traceable to an inborn savagery that neither church nor school nor public opinion—which latter I found very weak, however, in its condemnation—has yet been able to control. It is scarcely necessary to remark that such a state of things is not confined to this community; and I only notice it as an explanation of the existence of phthisis as given by the people themselves.

But it is gratifying to add that filthiness is not associated with the rest that hygiene must condemn. The houses of the Whites are mostly whitewashed or painted white, and personal cleanliness among all classes of the people is so open to observation that the most decided impression left on the visitor is that squalor is not in this instance associated with poverty. Nor can the inhabitants of this island be considered grossly ignorant or illiterate. True, many of the older people, born in slavery, cannot read, but this does not apply to the present generation. There is a fairly good school on the island, at which both the black and the white children assemble; and a noticeable absence of artificial or supercilious distinctions prevails. There are two churches, of different denominations, sustained partially by missionary effort. Their services, both on Sundays and week-days, are well attended by the people of both races, and drunkenness and profanity may be said to be almost unknown among them.

There appears to be little social life among the people, each family living very much apart, and the church being the one common meeting-place. A lack of knowledge of and interest in the affairs of the outer world was evidenced continually. A few of the boys growing up would like to go off "to see America," that unknown land from which come the ships,—their chief source of interest and profit; but the mass of the people seems never to dream of emigration any more than if they were rooted in the rocky soil,—a condition very puzzling to the visitor at first, but plain enough on later study. The announcement that a "Yankee" (vessel) is visible on the horizon never fails to rouse the entire community. The reason is complex. First of all, the old wrecking spirit only slumbers, and is not dead. The community is ever ready for "something to turn up;" if a wreck, well; if a vessel to take a cargo of pineapples, still well; for will not the sailors want some fruit, which the poorer residents have to sell, if not to eat,—and some shells or corals? And what child has not some of these? Possibly some service to be paid for at an extravagant rate; not to mention that if the ships come not the inhabitants find their occupation gone. Everything depends on the ripening of the pineapple, which is practically certain; and the exportation of it at a fair figure, which is by no means certain; and as the prices given by the shippers for this fruit annually tend to lessen, the people are becoming poorer rather than richer. However, it has never been my lot to see poverty so disguised as on this island; the entire village presents a picturesque, neat appearance; there is no squalor whatever; cleanliness, as before stated, is a most striking feature among all classes of the community; the clothing worn is adequate for this climate, and the people appear on Sundays decently clad; yet I have not the slightest hesitation in saying that the great majority, if not all of them, have not enough to eat, in the physiological sense of not being provided with food in such quantity and of such quality as will supply the losses of the body from tissue-waste.

Further, I think this community, and especially the white portion of it, affords the clearest evidence of psychical starvation; that is to say, of lack of mental and moral stimuli. This, however, will be clearer after an examination of the climatic conditions under which they live. I had not myself been many

days in this region before certain experiences of my own and of others of our party drew my attention to the influence of climate; and I endeavored, then and since, to study the subject closely, and to get its bearings, not only on the physical but on the psychical life of human beings.

The very fact that coral animals flourish only in waters comparatively shallow, and with a temperature not falling below about 66°-68° F., suffices to demonstrate in itself how high the average and the minimum must be in the Bahamas; while records kept throughout the year show that, as a matter of fact, the temperature never does fall below the above-noted point.

It was amusing to notice the astonishment of some of the children on seeing ice, which we had brought. One of the boys, on having a small piece placed in his hand, dropped it instantly, saying that "it burned;" while nothing could induce him to put any into his mouth. The following tabular statement of the temperatures for the month of June, as taken by myself, from the 9th to the 18th, at the hours indicated, will prove instructive:

At 7 A.M. 79°, 80°, 80°, 81°, 79°, 80°, 80°, 81°, 81°, 80°.

At 1 P.M. 83°, 83°, 84°, — 82°, 84°, 84°, 83°, 85°, 85°.

At 7 P.M. 80°, 81°, — — — — 80.5°, 81°, 82°, —

At 10 P.M. 79°, 79°, 79°, — — — 81°, 80.5°, 81°, 82°.

It will be noticed that the minimum was 79°, the maximum 85°; that the variations at a certain hour for each day were very slight; that the maximum variation during the twenty-four hours was small,—in a word, that the temperature for the hour and the day and the month approximated. This, taken with the observation that there is but little variation for each month of the year, establishes the fact that we have, in the climate of the Bahamas, one substantially without change of seasons, and with a *uniformly constant high temperature*. This condition in the environment has probably more to do with explaining the facts as one finds them in this community than any other; and after noting these, and the effect of the same conditions on himself and others of the party, the writer is prepared to believe that, in spite of racial superiority, the highest results, as evidenced in the character and achievements, cannot be attained by the Anglo-Saxon in a tropical climate. This conclusion may



not be in itself entirely novel; but the writer hopes to call attention to it in a new way, and, possibly, to place it on a foundation somewhat more scientific than that on which it has hitherto rested.

A broad fact that strikes a student of the condition of things on Green Turtle Key is that the Blacks deviate much less in condition and character from what they are elsewhere than the Whites. Excepting a few of the latter, who retain the English look of vigor, most of them have the stamp of weakness and anæmia in the plainest way impressed on them; they suggest feeble plants that have had insufficient light. The Blacks are not equal to the same race in the Northern States, perhaps, but are scarcely inferior to Negroes as found in some communities in the South.

It now remains to inquire what are the causes which have led to the degeneration of this English race. First of all must be named insufficient food, in the physiological sense, combined with impure air, from the custom of closing up the houses so thoroughly at night. The influence of such factors may also be well seen in the Indians of the Canadian Northwest living on the reserves. In consequence of the same sort of partial starvation, imperfect housing, and special forms of disease traceable to the advent of the white man with his peculiar vices, these Indians are fairly melting away off the face of the earth; consumption is especially destructive.

The women of all ages on Green Turtle Key have a very weakly, and generally unhappy, look; they show the influence of surroundings more than the men, as is nearly always the case.

Now, in a tropical climate, the lungs, the kidneys, and the skin,—three of the great excretors of the waste products of the bodily activities,—work under favorable conditions; there are not the climatic vicissitudes of northern latitudes to induce sudden congestions, or to throw very unequal work on different organs; but against this must be set the relaxing effect of the climate on the alimentary canal especially; hence on this island, as in other tropical lands, the tendency to actual disease is most manifest in this part of the body; but the amount really present here I could distinctly trace to other conditions, especially the quality of the food and the lack of variety in the dietary. But even when no actual disease is present, the decided lack of vigor referred to above is to be accounted for. No explanation of the

physical condition in which the nervous system does not play a large part can be at all complete; and the higher in the scale the race of men concerned, the more this must be taken into account. The bracing influence of a climate with moderate variations of temperature has its explanation largely through the nervous system. The fact that a cold bath raises the temperature cannot be wholly explained without bringing the nervous heat-producing mechanism into the reckoning.

Now, that the nervous system of the white man must be almost constantly depressed in this community may be made evident.

When it is borne in mind that the stimuli from the arrival of ships act only during the season of fruit-ripening, and that there are "hurricane months," during which no ships dare venture across the reef, it will be plain that for the greater part of the year this little community must be in a state of mental stagnation.

To the intelligent visitor, the objects here, totally unlike those he is accustomed to in his own land, have an intense interest. But all these are, to the man or the woman who has been looking on them for a lifetime, a very old story; water and sand and white rocks, and low, thick vegetation, make a wretchedly narrow environment after all, for a lifetime. What any brain becomes depends upon its capacity to develop; which is equivalent to saying that the cortical brain-cells concerned in the highest mental processes depend for their final best development very largely on the variety and number of (afferent) nervous impulses reaching them; that is to say, again, upon the richness of the individual's experiences; so that it seems to me absolutely impossible that the highest development could be attained in such a narrow life-prison as this really is to the constant resident.

It tells more on the white than on the black man because the brain of the former is superior to that of the latter; and conversely, the very difference here to be seen shows plainly that there is a pronounced inequality in favor of the white man's brain; for the circumstances under which they live are, at least, no worse in themselves, but rather better, in the case of the white man. The latter requires, for his best development, a richer experience than the Black.

Another very pronounced feature in the character of the people is their disinclination to steady, honest work; they are ready to speculate; they are prepared for wrecks; in fact, one finds the

gambling spirit well developed. It has, indeed, its actual manifestation as such, for groups of men may be seen any evening gaming by the hour for pennies,—exactly what one might expect as the outcome of such surroundings. But the climate alone tells in the plainest way as a depressing, energy-robbing factor. Hence the people will do without fish rather than expend the necessary energy to secure the much-needed nitrogenous food. A diet largely starchy will never produce the highest things, physical or other, in any race of men.

The lack of symmetry in the men, and much more so in the women, and an equal lack of comeliness of feature and beauty of expression, call for explanation.

It is to be borne in mind that, while there have been some emigrants, there have been but few immigrants; for thirty or forty years the community has been a stable one. Among a white population that does not travel, that does not receive accessions, and numbering only about three hundred, the play of "sexual selection" must be of the most restricted kind, and with corresponding results. But this does not furnish the entire explanation, I am quite sure. Long ago, Dr. O. W. Holmes, in his own inimitable manner, struck the key-note of the solution, in that remarkable book, "*Elsie Venner*." "Human beauty is an agricultural product in the country, growing up in men and women, as in corn and cattle, where the soil is good. Both in city and country, the evolution of the physical harmonies which make music to our eyes require a combination of favorable circumstances, of which alternations of unburdened tranquillity with intervals of varied excitement of mind and body, are among the most important. Where sufficient excitement is wanting, as often happens in the country, the features, however rich in red and white, get heavy, and the movements sluggish."

It may be said that for that play of the physical harmonies which constitutes good health a certain amount of variety and excitement, at all events in the Anglo-Saxon and some other races, is absolutely demanded. However much of a cage or prison such an island may be for men, it is incomparably more so for women; with them the variations, the stimuli, are reduced to a sad minimum; and so the flower fadeth.

The causes of the physical and psychical degeneracy to be observed on Green Turtle Key, in the Bahama Islands, may be

thus summarized: *An inadequate diet, in the physiological sense, combined with impure air; the depressing effect, physical and psychical, of a uniformly high temperature; the influence of uncertainty in the reward of exertion, and of unfounded expectation, begetting the gambling spirit; the limited play of sexual selection; and the lack of variety in the afferent influences reaching the nervous centres (experience),—all of which can be studied especially well in this community, on account of its diversity in race composition and its comparatively isolated and stable condition.*

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## HORNLESS RUMINANTS.

BY R. C. AULD, F.Z.S.

(Continued from page 746.)

THE genus *Bos* is composed of a large number of animals which fall into well-defined *bubaline*, *bisontine*, and *bovine*<sup>1</sup> divisions.

The buffaloes and bisons have to be passed over, leaving the bovines to be solely dealt with as the most typical representatives.

Bovines are divided into (1) the hump-backed, Asian or Indian, and (2) the level-backed, European or Caucasian. The former, *Bos indicus*, inhabit the more tropical regions, and are subdivided into *large* and *small* varieties, best known under the name of zebu. The latter, *Bos taurus*, inhabit the more temperate regions, and are subdivided (primarily) into *B. primigenius*, or *urus*, and *B. longifrons*, or small Celtic short-horn. These may be regarded as corresponding, as to size, respectively with the two zebu types.

The seat of the origin of the ox has been generally assigned to a part of Asia not very remote from Europe, and by a few the zebu has been regarded as the parent stock from which many or all European varieties have been derived. Andrew Murray ("Geog. Dist. of Mammals," p. 142) takes this view. He says there is no osteological difference, and steps of transition can be traced through all other breeds, the Italian being somewhat similar in color to the zebu type, and having a thickening of the shoulders indicative of a hump. Rütimeyer also seems to think that the zebu is the progenitor of the small *B. longifrons*. Darwin—and with him the majority of naturalists—regards the zebu as a spe-

<sup>1</sup> This word is here used in its restricted sense.